

The following guidance clarifies the requirements that all solid waste disposal facilities must comply with and also provides an outline of the documentation necessary to certify landfill closure.

Indiana's Solid Waste Rule, 329 IAC 2, requires that all solid waste disposal facilities be properly covered and closed by the end of their operating life or whenever a portion of the disposal area is filled to its approved final elevations. In addition, on October 9, 1991, USEPA issued a new federal solid waste rule, 40 CFR Parts 257 and 258, commonly called "Subtitle D." Part 258.1(d) specifies additional closure requirements and datelines that municipal solid waste landfills (MSWLFs) must comply with if the facility did not stop accepting waste on or before October 9, 1991. In addition, owners or operators of MSWLF units, that fail to complete cover installation within a six month period, are subject to all the requirements of 40 CFR Part 258, including 30-year post-closure monitoring. All MSWLF units that received waste on or after the effective date of Subtitle D (October 9, 1993 or April 9, 1994) must comply with all closure and post-closure requirements of Part 258.

One of the important differences between the requirements of Indiana's Solid Waste Rule and Subtitle D is that Subtitle D, Part 258.60(a)(1) requires the final cover system for municipal solid waste land disposal facilities to have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than  $1 \times 10^{-5}$  cm/sec. This requirement applies to all MSWLFs that did not close on or before October 9, 1991 or did not complete final cover installation within the prescribed time frame as listed in 40 CFR Part 258.1 as amended. Table 1 below, contains a summary of the effective dates and applicable closure requirements as presented in Subtitle D. Indiana's Solid Waste Rule, 329 IAC 2, does not have a permeability requirement for a final cover system.

Please note that this document does not include closure requirements for the municipal solid waste landfills that constructed their new units after the effective date of Subtitle D. Closure of those units will be addressed in the new Indiana Solid Waste Regulations.

**Table 1**

MSWLFs that stop accepting waste on or before October 9, 1991.	MSWLFs receiving under 100 tons/day of solid waste but stop accepting waste on or before April 9, 1994.	MSWLFs receiving over 100 tons/day of solid waste but stop accepting waste on or before October 9, 1993.
Comply with cover requirements of 329 IAC 2. Cover must be installed within 6 months of last receipt of wastes.	Install final cover system that complies with Subtitle D before October 9, 1994.	Install final cover system that complies with Subtitle D before October 9, 1994.

**I. Final Cover Requirements for Solid Waste Disposal Facilities**

**Municipal Solid Waste Landfills (MSWLFs):**

- a. Landfill areas that have been covered and vegetated prior to October 9, 1991, or stopped accepting waste on or before October 9, 1991, and have been closed within six months of the final waste disposal date, shall construct a final cover system in accordance with applicable final cover requirements as listed in 329 IAC 2-14 and their approved final grading plan. A minimum of two feet of clay-type soil cover is required.
- b. Landfill areas that remained open after October 9, 1991 or did not receive final cover within the prescribed length of time as listed in Subtitle D as amended, must have a final cover system that complies with all applicable final cover requirements as per 329 IAC 2- 14, their approved final grading plan or the closure plan and the applicable requirements of 40 CFR 258.60. A minimum of two feet of clay-type soil and six (6) inches of top soil must be provided.

**\*Note:** Municipal Solid Waste Landfills that remained open after the effective date of Subtitle D (October 9, 1993 or April 9, 1994) or did not apply the required final cover system over all open landfill areas within the prescribed length of time as listed in Subtitle D as amended, must comply with all requirements of 40 CFR part 258 including 30-year post-closure monitoring.

**All other Non-Municipal Solid Waste Disposal Facilities that**

**include:**

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**Final Cover and Closure Certification Requirements for Solid Waste Disposal Facilities**

- Sanitary landfills as defined under 329 IAC 2 but do not receive municipal waste as defined in 40 CFR 258;
- Construction/Demolition Sites as defined in 329 IAC 2;
- Restricted Waste Sites as defined in 329 IAC 2;

A final cover system for non-municipal solid waste disposal facilities must comply with all applicable requirements of 329 IAC 2-14 and the approved final grading plan or closure plan.

## **II. Closure Certification Requirements for all Solid Waste Disposal**

### **Facilities:**

1. To certify partial closure of a portion of the landfill area or to certify final closure of the land disposal facility, the following requirements must be met:
  - a. Submit a certification report signed by both the Permittee and an Indiana registered Professional Engineer, that the facility has been closed in accordance with the applicable rules and the approved final grading plan. The report shall verify the following:
    - i. Thickness of final cover:

A minimum of two feet of clay-type soil is required. Thicker cover must be constructed if specified in the approved facility plans or the facility is required to comply with 329 IAC 2-14-19. The thickness of cover may be verified by probes or a hand auger at a minimum frequency:

      - two borings/holes per acre for landfill up to one hundred (100) acres;
      - one boring/hole per five (5) acres for fill area beyond one hundred (100) acres.
    - ii. Thickness of top soil if applicable:

As per 329 IAC 2-14 sanitary landfills including municipal solid waste disposal units and restricted waste sites, type I and II, are required to apply six (6) inches of top soil. For verification method, refer to the above paragraph.
    - iii. Final slopes of the landfill:

For facilities that have an approved final grading plan under 329 IAC 2, the final slopes must comply with the minimum requirements of 329 IAC 2 -14 and the approved closure plan. For landfill areas that have a final grading plan approved prior to the effective date of Solid Waste Rule 329 IAC 2, the final slopes must comply with the approved final grading plan but shall not be less than two percent (2%) and not

Final Cover and Closure Certification Requirements for Solid Waste Disposal Facilities

more than thirty three percent (33%). Verification of proper slopes and final contours shall be accomplished by providing an as-built drawing depicting landfill final contours and elevations.

- iv. Established vegetation;
- v. Verification that a unified soil classification of ML, CL, MH, CH, or OH was used in the final cover system or other material as approved by the Commissioner. In order to verify the above-mentioned type of soil classification, at a minimum the following tests must be performed:

Testing	Frequency
Grain Size Distribution	One (1) test per acre, taken at mid-depth, of in-place final cover, or every 3,000 cubic yards, or whenever soil changes
Atterberg Limits (Liquid Limits and Plasticity Index)	1 test per acre, taken at mid-depth, of in-place final cover, or every 3,000 cubic yards, or whenever soil changes
Permeability (applies to MSWLFs)	0 - 10 acres fill area - minimum of five (5) tests evenly distributed
	10 - 20 acres fill area - minimum of seven (7) tests evenly distributed
	20 -50 acres fill area -minimum of ten (10) tests evenly distributed
	50 - 80 acres fill area - minimum thirteen (13) tests evenly distributed
	80 or more acres fill area - minimum fifteen (15) tests evenly distributed;

\*Note: These tests must be taken at mid-depth of the in-place final cover.

- b. Requirements of 329 IAC 2-15-5 closure certification must also be included.